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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

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Insects

TITLE

FOREST INSECT SURVEY EASTERN LASSEN AND SUSANVILLE AREAS LASSEN COUNTY, CALIFORNIA SEASON OF 1943

Annex 1
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1943

by

Philip C. Johnson

Forest Insect Laboratory
341 Giannini Hall, U. C.
Berkeley 4, California

April 13, 1944

SUBJECT—

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U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
FOREST INSECT INVESTIGATIONS

FOREST INSECT SURVEY
EASTERN LASSEN AND SUSANVILLE AREAS
LASSEN COUNTY, CALIFORNIA
SEASON OF 1943

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Berkeley 4, California
April 13, 1944

ABSTRACT OF SURVEY RESULTS

THE AREA

Acreage:	Virgin pine,	Eastern Lassen Area	325,680
		Susanville Area	68,200
	Cutover pine,	Eastern Lassen Area	84,020
		Susanville Area	75,160
Virgin pine stand:		Eastern Lassen Area	3,968,000 M b.m.
		Susanville Area	840,000 M b.m.

THE 1942 INFESTATION (Complete record)

Total pine timber killed in the Eastern Lassen and Susanville Areas, Lassen County, California (Table 4):

Number of trees	13,000
Volume	15,920,000 b.m.
Average volume per acre	42.4 b.m.
Proportion of virgin pine stand	0.3 percent

Classification: Endemic

Primary insects: Western pine beetle in ponderosa pine.
Jeffrey pine beetle in Jeffrey pine.

Trend: Increase of 19 percent over 1941

Control work completed: None recommended

THE 1943 INFESTATION (Incomplete record)

Classification: Endemic

Primary insects: Western pine beetle in ponderosa pine.
Jeffrey pine beetle in Jeffrey pine.

Trend: Probable over-all increase of 10 percent over 1942

Control recommendations: No direct control measures needed now.

INTRODUCTION

A persistent bark beetle problem has been one of the greatest obstructions to successful utilization and management of the pine stands in Lassen County during the last two decades. The volume of timber killed each year by these insects has concerned practically every owner and operator of timberlands in one way or another. The owners have been especially cognizant of the loss of revenue as represented by the mass of dead timber which, in many instances, has accumulated over a number of years at an annual rate of one percent or more of the stand volume. The loss of this timber has been important to the Forest Service not only because of its monetary value, but because it continues to frustrate the sustained yield management plans for the Eastern Lassen Working Circle and other Government owned blocks of timber, especially making invalid those sections dealing with timber inventories and initial cutting schedules.

Of importance to the operators is the interruption in the normal progress of logging which has occurred at times by having to move the operations bodily to rather distant localities as a means of keeping ahead of the beetles. The great accumulation of standing and fallen bug-killed snags has also made necessary special precautions against fire during the summer months and impaired the movement of logging and road machinery in the woods.

Until recently, the prevailing measures of beetle control were considered by most of the timber managing agencies to be economically feasible only when infestations of extreme epidemic proportions threatened, hence they were interested in knowing when these were developing. They have been interested in knowing, too, how much timber was being killed year after year so that their stand inventories could be adjusted for any net depletion which occurred. The Forest Insect Laboratory at Berkeley, California, has conducted a series of annual bark beetle surveys beginning in 1930 to provide this information and to secure data for studying infestation characteristics and trends. The most recent of these surveys was made during the period September 15 to 27, 1943, by Mr. J. W. Bongberg and the writer. Prior to 1941 the surveys were made only in what is now known as the Eastern Lassen Area but after that year they were extended to the Susanville Area (Figure 1). These two areas together include practically all of the commercial pine timberlands in Lassen County.

Each survey has been followed by a report which discussed in some detail the current beetle situation, gave estimates of the amount of timber killed and pointed out the places where control work was needed. In addition to presenting the results of the 1943 survey, this report has included a summary of past insect conditions. Inasmuch as the Forest Service and some of the lumber companies have made a number of personnel changes in their timber operating departments during the past year, the present report should be especially helpful to those who never before have had to contend with insects as part of their normal forestry or lumbering activities.

Figure 1

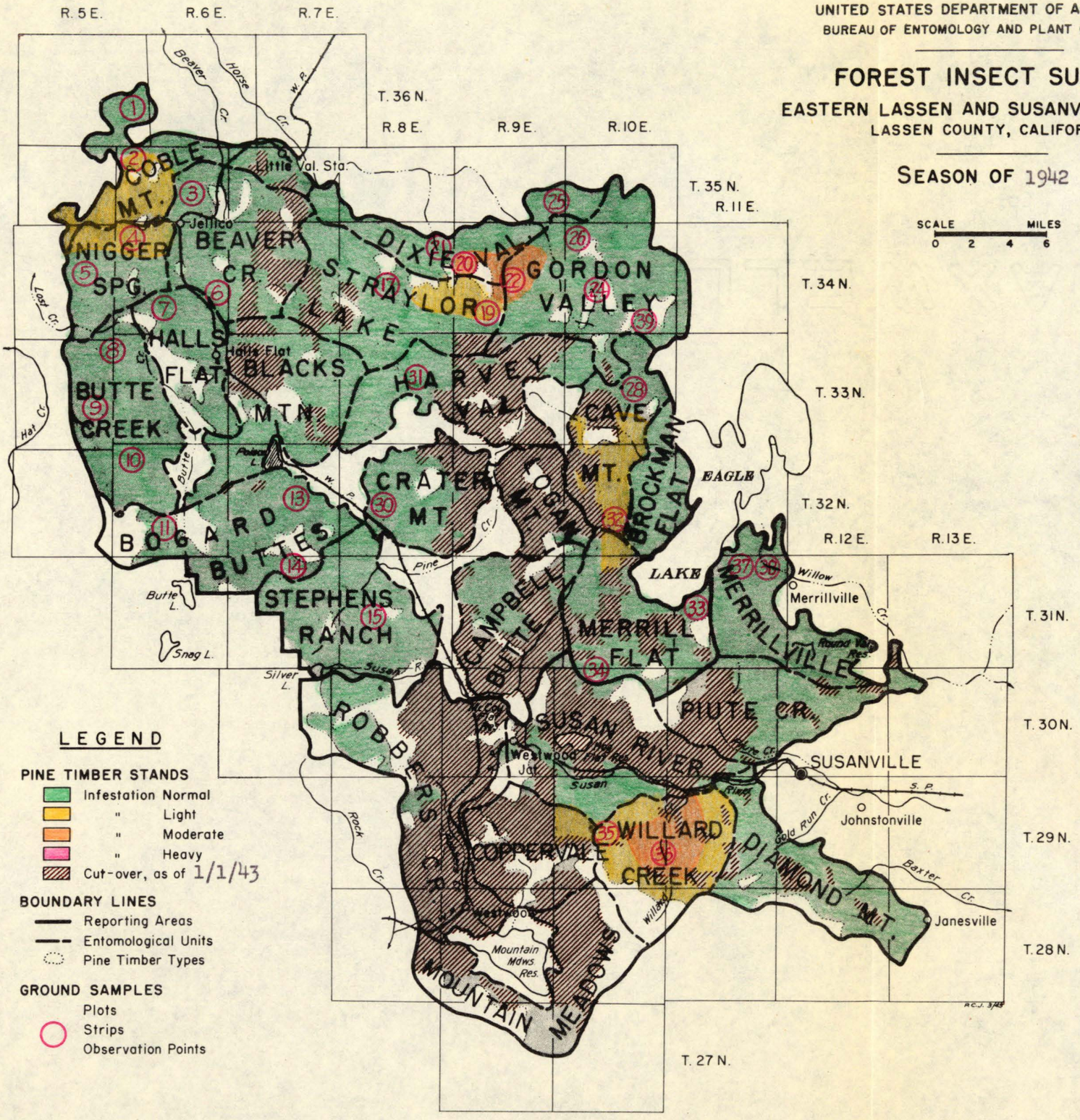
UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT SURVEY

EASTERN LASSEN AND SUSANVILLE AREAS

LASSEN COUNTY, CALIFORNIA

SEASON OF 1942



LEGEND

PINE TIMBER STANDS

- Infestation Normal
- " Light
- " Moderate
- " Heavy
- Cut-over, as of 1/1/43

BOUNDARY LINES

- Reporting Areas
- Entomological Units
- Pine Timber Types

GROUND SAMPLES

- Plots
- Strips
- Observation Points

HISTORY OF BARK BEETLE INFESTATIONS

Amount of Pine Timber Killed

The engraved beetle galleries on old snags and stumps and the openings in the old growth crown canopy indicate that bark beetles have been active in the Lassen country for many years. Not until the present system of annual bark beetle surveys was established, however, was it possible to determine the quantitative damage caused by their attacks. Estimates of the amount of pine timber killed each year from this source (Table 1) indicate the seriousness of the beetle problem in the two reporting areas covered by the surveys.

Table 1. Volume of merchantable ponderosa and Jeffrey pine killed by bark beetles in the Eastern Lassen and Susanville Areas, Lassen County, 1930-42.

Year	Eastern Lassen Area (bd. ft.)	Susanville 1/ Area (bd. ft.)
1930	8,051,000	
1931	10,456,000	
1932	59,069,000	
1933	64,732,000	
1934	96,014,000	
1935	62,088,000	
1936	37,260,000	
1937	21,050,000	
1938	17,326,000	
1939	33,053,000	
1940	36,525,000	
1941	8,900,000	1,600,000
1942	10,170,000	5,750,000
1930-42	464,694,000	7,350,000

Average virgin acreage reported upon each year, 1930-1942:

E. Lassen	313,400
Susanville	63,960

Average b.m. volume killed per year:

E. Lassen	113
Susanville	58

1/ No surveys prior to 1941.

The amount of pine timber killed in the whole of Lassen County since 1930 is estimated to be approximately 650 million board feet. This means that the value of the crop of mature timber now ready for harvest has been reduced by 2½ to 3 million dollars. As green trees, this bug-killed timber would have been sufficient to keep the sawmills of Westwood, Susanville and Little Valley running at capacity for two to three years. To the forester, it means that, on each acre on the Eastern Lassen Area since 1930, beetles have killed an average of 25 board feet more than the annual gross growth of the stands and that, on the Susanville Area since 1941, enough timber was killed to reduce the average gross increment of 125 board feet per acre per year to a net growth of 67 board feet.

Trend of Infestations

Measurements obtained from the sample plots and strips used by the bark beetle surveys have been averaged and plotted (Figure 2) to show the trends of the infestations in recent years. There is some indication that the endemic and epidemic periods occur in cycles which may be regulated to some extent by the influences of certain environmental factors acting upon the beetle populations and their host trees.

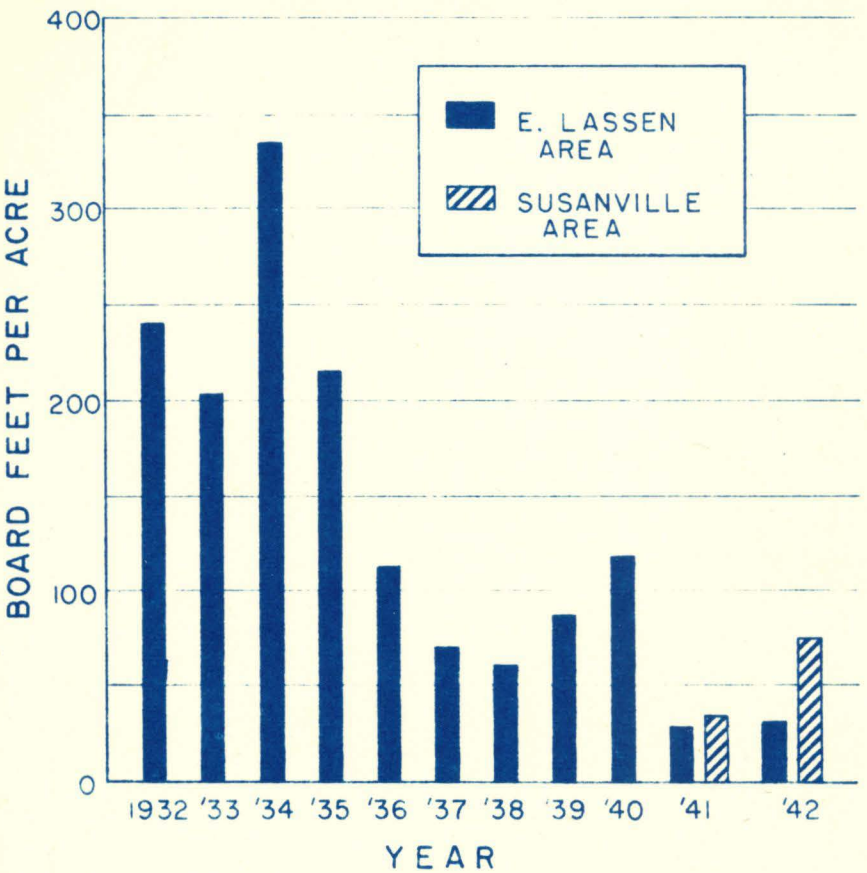


Figure 2. Trend of bark beetle infestations in the Eastern Lassen and Susanville Areas, Lassen County, California; 1932 to 1942 inclusive.

Another upswing in the infestation trend has been expected for the past two or three years and it did appear as though one was in progress during 1939 and 1940. The sudden drop in 1941 which has thus far been sustained is believed to have been due to natural factors which have favored increased tree vigor during this time. There is evidence, however, that the low point in the current trend was reached in 1941 and that the slight increases of 1942 and 1943 may be the forerunner of another period of accelerated losses. There is still a plentiful supply of high risk trees in the present stands to support epidemic infestations given the right conditions.

Beetle Control Projects

Efforts to curb the infestations have been made upon several occasions during the past few years. During the winter of 1933-1934 the Forest Service carried out direct control (cut-peel-burn) treatment on 23,250 acres of virgin pine timber in the Nigger Spring, Coble Mountain and Beaver Creek Units (Figure 1). The following winter an additional 17,335 acres were similarly treated in parts of the Halls Flat, Harvey Valley, Coble Mountain and Dixie Valley Units. Neither of these projects was followed by maintenance work so that the effects of the excellent control secured the year following treatment soon diminished. Three years after treatment little difference could be seen in the infestation on treated and untreated areas. Some measure of control was secured in 1935 from the results of an experiment in salvaging beetle-killed timber on 6,000 acres in the Fruit Growers Supply Company sale area, but it was more of a by-product than an objective of the experiment.

THE 1942 BARK BEETLE INFESTATION

The 1943 survey completed records of the beetle-caused losses which occurred on the sample strips during 1942 and these records, in turn, have made it possible to complete loss estimates for the various units in the Lassen area and to describe rather fully some of the features of the infestations responsible for the losses.

Characteristics of the Infestation

The infestation in the Eastern Lassen and Susanville Areas was endemic everywhere except for a localized outbreak of decided epidemic proportions in the Willard Creek Unit of the latter area. Some increase over 1941 was noted in both areas which, on the whole, was slight despite the apparent greater increase in the Susanville Area caused by the situation along Willard Creek.

The infestation was almost wholly made up of scattered single ponderosa and Jeffrey pine trees killed by the western pine beetle, Dendroctonus brevicomis Lec., and the Jeffrey pine beetle, D. jeffreyi Hopk., respectively. Nearly every one of these trees was at least mature and most were overmature and very decrepit in appearance. An unusually high percentage of them had been previously struck by lightning earlier in

the year, a few bore scars of other mechanical injury and the remainder were composed of those naturally low in vigor and with high beetle susceptibility ratios.

Pine Mortality on the Sample strips

The basis for the 1942 beetle damage estimates appearing later in the report was the measured beetle-caused pine mortality obtained from 34 roadside sample strips totalling 5,016 timbered acres. The tabulation of this pine loss (Table 2) indicates the course of the infestation at given points throughout the two reporting areas. Some of the salient features of the tabulation are brought out in the following summary and compared to those of the previous year:

Summary of Table 2. Pine timber killed by bark beetles on virgin sample strips, Eastern Lassen and Susanville Areas, Lassen County, California. Season of 1941 and 1942.

Tree Species	Occurrence 1/					
	Average		Maximum		Minimum	
	1941	1942	1941	1942	1941	1942
	BOARD FEET PER ACRE					
Ponderosa pine 2/	19.7	23.9	88.1	101.9	0	0
Jeffrey pine 3/	11.6	13.3	82.5	70.5	0	0
Sugar pine 4/	0	0	0	0	0	0
	PERCENT OF STAND					
Ponderosa pine 2/	0.6	0.8	10.2	12.9	0	0
Jeffrey pine 3/	0.3	0.7	1.9	9.8	0	0
Sugar pine 4/	0	0.	0.	0	0	0

1/ The figures listed vertically under columns labelled "1941" and "1942" are not necessarily from the same strips.
2/ Basis: Ponderosa pine; 32 strips, 4,696 acres.
3/ Basis: Jeffrey pine; 31 strips, 4,536 acres.
4/ Basis: Sugar pine; 1 strip, 160 acres.

The 1942 losses on the roadside strips showed considerable variation due partly to differences in forest conditions but mostly to the fact that the infestation was so low as to jeopardize the value of the strips as a sampling medium. In some instances, the presence of one tree more or less varied the measured losses on the strips by as much as 100 percent. In general, however, the strips indicate an increase in the 1942 infestation over 1941 of 21 percent for ponderosa pine and 15 percent for Jeffrey pine. The per-acre loss for both tree species was well below the probable gross increment for the year and consequently no stand depletion is believed to have occurred over most of the two reporting areas.

Estimated Pine Mortality by Units

Estimates of the amount of pine timber killed by bark beetles in the virgin pine stands of the various units during 1942 are given in detail in Table 3 and in summary form as follows:

Summary of Table 3. Virgin pine timber killed by bark beetles, Eastern Lassen and Susanville Areas, Lassen County, California. Season of 1942.

Area	Tree Species	No. of trees	Board-foot Volume Total	Av./Ac.	Percent of Stand
Eastern Lassen (325,680 acres)	PP	7,880	7,200,000	23.1	0.3
	JP	1,870	2,970,000	9.1	0.3
	PP-JP	9,750	10,170,000	32.2	0.3
Susanville Area (68,200 acres)	PP	1,770	3,100,000	51.9	0.6
	JP	1,560	2,650,000	38.9	0.8
	PP-JP	3,330	5,750,000	90.8	0.7
Total of both Areas (393,880 acres)	PP	9,650	10,300,000	28.1	0.3
	JP	3,430	5,620,000	14.3	0.4
	PP-JP	13,080	15,920,000	42.4	0.3

A close inspection of Table 3 shows that some units suffered heavier losses than other nearby units. In this respect, it is important to note that the unit estimates are large simply because their timbered acreage is greater. The seriousness of the infestation in the different units is more accurately indicated by the average board-foot volume per acre killed. Using this as the criterion, the most critical area in 1942 was the Willard Creek Unit where the loss in ponderosa and Jeffrey pine amounted to a staggering total of 265 board feet per acre, or slightly over 4,000,000 board feet for the unit. This unit contains only 4 percent of the virgin pine acreage in the Eastern Lassen and Susanville Areas, yet it sustained 25 percent of the total loss in both areas. Other units having a high rate of loss in 1942 were Gordon Valley, 50 board feet per acre; Merrill Flat, 54 board feet per acre; and Harvey Valley, 48 board feet per acre.

THE 1943 BARK BEETLE INFESTATION

The 1943 infestation was estimated to be about 60 percent complete when the 1943 survey was made, so it is not possible to make more than a prediction as to the loss for the full calendar year. There is some indication that it will show an increase of perhaps 10 percent over the 1942 loss in the Eastern Lassen Area while a sharp reduction will bring it well below the 1942 figure in the Susanville Area. The latter is due primarily to a heavy decline in the Jeffrey pine infestation.

A few "hot spots" were observed where the 1943 losses seemed heavier than the general level throughout the reporting area. The largest of these, and the most surprising, was a large area covering most of the

Bogard Buttes country and reaching across Grays Valley to the western slope of Crater Mountain. This area includes some of the best timber-growing sites in the Eastern Lassen. The stands are predominantly ponderosa pine with this species averaging 16,000 board feet to the acre and of excellent quality. Similar heavy losses on poorer sites were noted on several smaller areas containing chiefly Jeffrey pine. One of these lay between Jelly Camp and the Red River Lumber Company's power line to the west; another was located in the vicinity of Straylor Lake. All of these areas will bear close watching as any heavier infestations will undoubtedly cause stand depletion.

The 1943 infestation was similar in character to the one which occurred in 1942 and which has already been described.

OTHER INSECT INFESTATIONS

Great Basin Tent Caterpillar

Widespread defoliation of bitterbrush and other forage plants was caused throughout northeastern California during the early summer of 1943 by the Great Basin tent caterpillar, Malacosoma fragilis Stretch. Damage in Lassen County was noticeable but not severe enough to hamper summer grazing of sheep and other range feeding animals.

Seed-infesting Insects

Cone moths belonging to the genus Laspeyresia continued to cause heavy damage to the Jeffrey pine seed crop during 1943. The small, naked whitish caterpillars of this moth complete most of their growth in the axis of the maturing cones without any apparent arrest in cone development. Their habit of feeding upon the ripening seed, however, very effectively reduces the seed crop. It is estimated that about two-thirds of the cones were infested and about one-half the seed crop was destroyed in 1943. The moth has been prevalent in the Lassen country during the past few years but, so far, there are no practical methods of control.

IMMEDIATE INSECT CONTROL RECOMMENDATIONS

Current insect infestations are not serious enough anywhere in the Eastern Lassen or Susanville Areas to warrant immediate control measures. The sudden outbreak of bark beetles which occurred in the Willard Creek Unit during 1942 appears to be subsiding of its own accord and the current conditions around the Bogard Buttes, emphasized earlier in the report, are still somewhat removed from epidemic status or the period of rapid increase preceding it for which control is usually desirable.

Table 2. Pine timber killed by bark beetles on virgin sample strips, Eastern Lassen and Susanville Areas, Lassen County, California.

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	SAMPLE STRIPS NO.	TIMBERED ACREAGE	HAZARD RATING[1]	PINE STAND TREE SPP.	VOLUME M b.m.	TIMBER KILLED IN 1942 NO. OF TREES	VOLUME (b.m.)	VOLUME PER ACRE	% OF STAND
Coble Mountain	1	160	V	PP	670	5	1,390	8.7	0.2
				JP	110	none	none	none	none
				Total	780	5	1,390	8.7	0.2
	2	160	V	PP	670	7	3,860	24.1	0.6
				JP	110	1	1,490	9.3	1.4
				Total	780	8	5,350	33.4	0.7
Dixie Valley	20	96	V	PP	160	4	4,750	49.5	3.0
				JP	350	2	3,710	38.6	1.1
				Total	510	6	8,460	88.1	1.7
	21	80	V	PP	550	2	1,680	21.0	0.3
				JP	90	none	none	none	none
				Total	640	2	1,680	21.0	0.3
	25	80	V	PP	370	none	none	none	none
				JP	270	none	none	none	none
				Total	640	none	none	none	none
Nigger Spring	4	160	IV	PP	40	2	5,140	32.1	12.9
				JP	1,170	2	3,140	19.6	0.3
				Total	1,210	4	8,280	51.7	0.7
	5	160	IV	PP	1,680	none	none	none	none
				JP	610	none	none	none	none
				Total	2,290	none	none	none	none

Table 2. (continued)

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	SAMPLE STRIPS			PINE STAND		TIMBER KILLED IN 1942			
	NO.	TIMBERED ACREAGE	HAZARD RATING[1]	TREE SPP.	VOLUME M b.m.	NO. OF TREES	VOLUME (b.m.)	VOLUME PER ACRE	% OF STAND
Beaver Creek	3	160	IV	PP	780	5	3,760	23.5	0.5
				JP	620	2	1,620	10.1	0.3
				Total	1,400	7	5,380	33.6	0.4
	6	160	III-IV	PP	440	none	none	none	none
				JP	820	1	270	1.7	none
				Total	1,260	1	270	1.7	none
Straylor Lake	17	144	IV	PP	1,210	6	3,730	25.9	0.3
				JP	130	none	none	none	none
				Total	1,340	6	3,730	25.9	0.3
	19	160	IV	PP	1,160	9	6,830	42.7	0.6
				JP	350	none	none	none	none
				Total	1,510	9	6,830	42.7	0.5
Gordon Valley	22	160	IV	PP	1,340	16	16,300	101.9	1.2
				JP	550	1	1,870	11.1	0.3
				Total	1,890	17	18,170	113.0	1.0
	24	152	III-IV	PP	1,600	none	none	none	none
				JP	910	none	none	none	none
				Total	2,510	none	none	none	none
	26	160	III-IV	PP	1,030	2	1,660	10.4	0.2
				JP	710	1	1,440	9.0	0.2
				Total	1,740	3	3,100	19.4	0.2
	39	72	IV	PP	1,600	1	3,250	45.1	0.2
				JP	910	1	1,570	21.8	0.2
				Total	2,510	2	4,820	66.9	0.2

Table 2. (continued)

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	SAMPLE STRIPS			PINE STAND		TIMBER KILLED IN 1942			
	NO.	TIMBERED ACREAGE	HAZARD RATING[1]	TREE SPP.	VOLUME M b.m.	NO. OF TREES	VOLUME (b.m.)	VOLUME PER ACRE	% OF STAND
Butte Creek	8	160	III	PP	530	1	1,020	6.4	0.2
				JP	1,270	2	740	4.6	0.1
				Total	1,800	3	1,760	11.0	0.1
	9	160	III	PP	360	4	3,860	24.1	1.1
				JP	1,410	none	none	none	none
				Total	1,770	4	3,860	24.1	0.2
	10	160	III	PP	1,690	1	1,100	6.9	0.1
				JP	1,280	1	2,860	17.9	0.2
				Total	2,970	2	3,960	24.8	0.1
Halls Flat	7	160	III	JP	1,010	2	5,440	34.0	0.5
	29	160	III-IV	PP	620	2	1,380	8.6	0.2
				JP	760	1	2,900	18.1	0.4
				Total	1,380	3	4,280	26.7	0.3
Harvey Valley	31	160	IV	PP	2,280	5	3,140	19.6	0.1
				JP	220	none	none	none	none
				Total	2,500	5	3,140	19.6	0.1
Cave Mountain	28	160	IV-V	PP	1,920	2	2,060	12.9	0.1
				JP	480	1	1,020	6.4	0.2
				Total	2,400	3	3,080	19.3	0.1
	32	160	IV	PP	1,660	11	11,490	71.8	0.7
Bogard Buttes	11	160	III	PP	470	none	none	none	none
				JP	2,060	3	7,950	49.7	0.4
				Total	2,530	3	7,950	49.7	0.3
	13	160	III	PP	3,150	3	3,230	20.2	0.1
				JP	440	none	none	none	none
				Total	3,590	3	3,230	20.2	0.1

Table 2. (continued)

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	SAMPLE STRIPS NO.	SAMPLE STRIPS TIMBERED ACREAGE	SAMPLE STRIPS HAZARD RATING 1/	PINE STAND TREE SPP.	PINE STAND VOLUME M b.m.	TIMBER KILLED IN 1942 NO. OF TREES	TIMBER KILLED IN 1942 VOLUME (b.m.)	TIMBER KILLED IN 1942 VOLUME PER ACRE	TIMBER KILLED IN 1942 % OF STAND
Stephens Ranch	14	160	III	PP	2,650	none	none	none	none
	15	160	III	JP	3,080	1	800	5.0	none
Crater Mountain	30	152	III-IV	PP	2,300	4	6,230	41.0	0.3
				JP	240	none	none	none	none
				Total	2,540	4	6,230	41.0	0.2
Merrill Flat	33	160	III-IV	PP	2,630	5	3,490	21.8	0.1
				JP	180	1	2,000	12.5	1.1
				Total	2,810	6	5,490	34.3	0.2
	34	160	III-IV	PP	1,600	1	3,810	23.8	0.2
				JP	610	2	5,010	31.3	0.8
				SP	400	none	none	none	none
				Total	2,610	3	8,820	55.1	0.3
SUSANVILLE AREA									
Willard Creek	35	160	III-IV	PP	860	4	6,940	43.4	0.8
				JP	1,570	6	11,280	70.5	0.7
				Total	2,430	10	18,220	113.9	0.7
	36	80	III	PP	560	1	7,700	96.3	1.4
				JP	340	2	4,330	54.1	1.3
				Total	900	3	12,030	150.4	1.3
Merrillville	37	160	IV	PP	1,840	3	2,510	15.7	0.1
				JP	10	2	980	6.1	9.8
				Total	1,850	5	3,490	21.8	0.2
	38	160	III	PP	1,560	4	1,680	10.5	0.1

1/ Beetle hazard ratings (Forest Insect Hazard Inventory): I - very low; II - low; III - moderate; IV - high; V - very high

Table 3. Virgin pine timber killed by bark beetles.
Eastern Lassen and Susanville Areas.
California. Season of 1942.

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	PINE TYPE ACREAGE (January 1, 1943)			VIRGIN PINE STAND		TIMBER KILLED 1942			
						Trees	VOLUME		
	Virgin	Cutover	Total	SPP.	(M b.m.)	No.	M b.m.	b.m./a c.	% stand
Coble Mtn.	20,490	1,020	21,510	PP	105,750	800	390	18.8	0.4
				JP	11,010	120	130	6.5	1.2
Dixie Valley	17,450	-	17,450	PP	86,730	310	320	18.3	0.4
				JP	41,760	70	130	7.7	0.3
Nigger Spring	14,830	-	14,830	PP	73,110	60	160	10.7	0.2
				JP	86,320	130	270	17.9	0.3
Beaver Creek	21,150	7,230	28,380	PP	138,370	510	370	17.6	0.3
				JP	53,600	230	170	8.0	0.3
Straylor Lake	25,970	4,100	30,070	PP	181,860	1,560	980	37.8	0.5
				JP	89,240	30	60	2.2	0.1
Gordon Valley	34,210	810	35,020	PP	322,220	1,090	1,340	39.3	0.4
				JP	124,770	240	360	10.5	0.3
Butte Creek	27,260	-	27,260	PP	226,660	330	340	12.5	0.2
				JP	182,460	160	200	7.5	0.1
Halls Flat	11,320	-	11,320	PP	17,300	70	50	4.3	0.3
				JP	76,210	110	300	26.1	0.4
Black's Mtn.	24,210	6,040	30,250	PP	277,270	630	800	33.0	0.3
				JP	104,780	120	190	7.8	0.2
Harvey Valley	16,040	11,980	28,020	PP	197,340	990	630	39.2	0.3
				JP	28,890	100	140	9.0	0.5
Cave Mtn.	12,970	6,450	19,420	PP	115,860	420	420	32.5	0.4
				JP	31,290	50	60	4.3	0.2
Bogard Buttes	24,890	310	25,200	PP	281,180	150	170	6.7	0.1
				JP	118,470	150	410	16.6	0.3
Stephens Ranch	27,760	-	27,760	PP	405,150	170	190	6.7	0.1
				JP	12,440	60	50	1.7	0.4
Crater Mtn.	10,050	9,420	19,470	PP	137,720	140	210	20.5	0.2
				JP	24,060	60	60	6.0	0.2

Table 3. (continued)

EASTERN LASSEN AREA

ENTOMOLOGICAL UNIT	PINE TYPE ACREAGE (January 1, 1943) Virgin	Cutover	Total	VIRGIN PINE STAND Spp.	(M b.m.)	TIMBER KILLED 1942 Trees No.	VOLUME M b.m.	b.m./a c.	% stand
Logan Mtn.	1,120	11,880	13,000	PP	11,590	20	20	20.5	0.2
				JP	10,050	10	10	6.0	0.1
Campbell Butte	7.720	16,080	23,800	PP	79,140	110	160	20.5	0.2
				JP	17,320	50	50	6.0	0.3
Merrill Flat	17,650	8,700	26,350	PP	187,180	490	620	35.3	0.3
				JP	47,780	140	330	18.8	0.7
				SP	33,150	none	none	none	none
Brockman Flat	10,590	-	10,590	PP	6,070	30	30	2.9	0.5
				JP	23,570	40	50	4.3	0.2
				PP	2,850,500	7,880	7,200	23.1	0.3
SUBTOTAL	325,680	84,020	409,700	JP	1,084,020	1,870	2,970	9.1	0.3
				SP	33,150	none	none	none	none

SUSANVILLE AREA

Robbers Creek	9,830	31,740	41,570	PP	12,340	20	20	2.5	0.2
				JP	135,050	150	340	34.4	0.3
Susan River	8,120	22,320	30,440	PP	82,100	80	280	34.9	0.3
				JP	27,070	130	250	31.2	0.9
Willard Creek	15,360	6,470	21,830	PP	86,950	580	2,150	139.7	2.5
				JP	91,690	950	1,910	124.6	2.1
Piute Creek	14,640	13,090	27,730	PP	144,830	640	380	26.2	0.3
				JP	36,500	190	90	6.1	0.2
Merrillville	20,250	1,540	21,790	PP	188,700	450	270	13.1	0.1
				JP	34,520	140	60	3.1	0.2
				PP	514,920	1,770	3,100	51.9	0.6
SUBTOTAL	68,200	75,160	143,360	JP	324,830	1,560	2,650	38.9	0.8
				PP	3,365,420	9,650	10,300	28.1	0.3
TOTALS OF ABOVE TWO AREAS	393,880	159,180	553,060	JP	1,408,850	3,430	5,620	14.3	0.4
				SP	33,150	none	none	none	none
				ALL SPP.	4,807,420	13,080	15,920	42.4	0.3